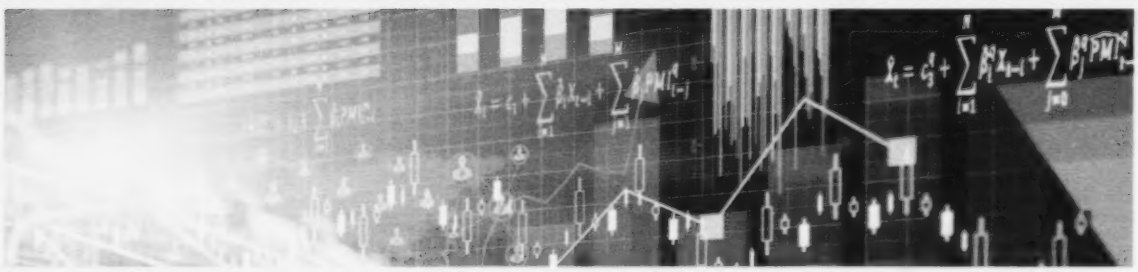
BANK OF CANADA
BANQUE DU CANADA

Staff Analytical Note/Note analytique du personnel 2018-27

Characterizing Canada's Export Sector by Industry: A Supply-Side Perspective



by Taylor Webley

Canadian Economic Analysis Department
Bank of Canada
Ottawa, Ontario, Canada K1A 0G9
twebley@bank-banque-canada.ca

Bank of Canada staff analytical notes are short articles that focus on topical issues relevant to the current economic and financial context, produced independently from the Bank's Governing Council. This work may support or challenge prevailing policy orthodoxy. Therefore, the views expressed in this note are solely those of the authors and may differ from official Bank of Canada views. No responsibility for them should be attributed to the Bank.

Acknowledgements

I would like to thank Russell Barnett, Dany Brouillette, Willy Chetwin, Adrienne Gagnon, Claudia Godbout, Romanos Priftis, Olena Senyuta, Christopher D'Souza and Jing Yang for helpful comments and suggestions throughout this project. I would also like to thank Kevin MacLean and Monica Sanchez Trujillo for their excellent research assistance and Carole Hubbard and Nicole van de Wolfshaar for their editorial services. All remaining errors are my own responsibility.

ISSN 2369-9639

© 2018 Bank of Canada

Abstract

This note examines supply-side trends in Canadian non-energy industries and their implications for export performance. Between 2002 and 2016, capital stocks and total labour input declined in many industries that export non-energy goods. These soft trends in the factors of production have likely contributed to the decline in non-energy exports in about half of the goods industries analyzed in this note. On the other hand, Canada's service sector has consistently increased its capital stock, workforce and productivity, which has helped it maintain solid production and export growth. Nevertheless, following the 2007–09 global financial crisis, supply-side trends in several goods-exporting sectors have improved, and this has led to partial rebounds in production and exports. Should these recent supply-side trends extend into the future, non-energy exports might struggle to grow in line with foreign activity without further improvements in the rates of capital formation, hiring or productivity.

Bank topics: International topics; Productivity
JEL codes: E, E2, E22, E23, E24, F, F1, F19

Résumé

Cette note examine l'évolution des facteurs de long terme liés à l'offre dans les secteurs non énergétiques de l'économie canadienne ainsi que ses incidences sur les exportations. Entre 2002 et 2016, le stock de capital et le facteur travail global ont baissé dans de nombreux secteurs exportateurs de biens non énergétiques. Cette évolution des facteurs de production a probablement contribué à la baisse des exportations hors énergie dans environ la moitié des secteurs de biens analysés. Par contre, le secteur canadien des services a sans cesse augmenté son stock de capital, ses effectifs et sa productivité, ce qui l'a aidé à afficher une solide croissance de la production et des exportations. Cependant, après la crise financière mondiale de 2007-2009, l'amélioration des facteurs liés à l'offre a permis un redressement partiel de la production et des exportations. Si cette amélioration se poursuivait, les exportations hors énergie pourraient peiner à suivre le rythme de l'activité étrangère sans progression constante des taux de formation du capital, d'embauche et de productivité.

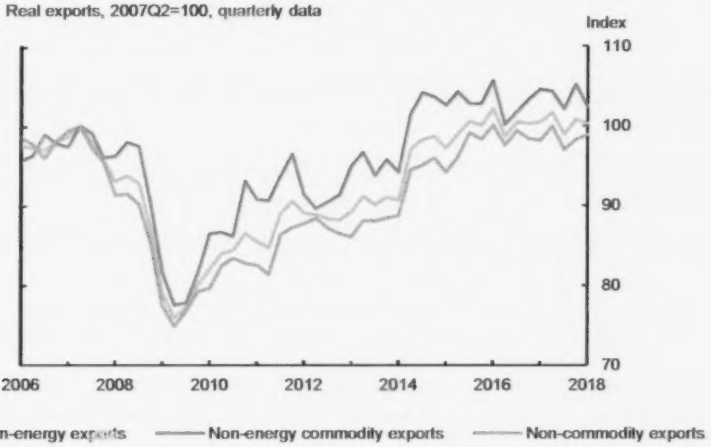
Sujets : Questions internationales; Productivité
Codes JEL : E, E2, E22, E23, E24, F, F1, F19

1. Introduction

In the aftermath of the global financial crisis, non-energy exports (NEX) have been gradually recovering (**Chart 1**). Following the trough in 2009, the level of NEX did not surpass its pre-crisis (2007) peak until mid-2015. Within NEX, non-commodity exports (NCX) have seen a slower recovery than non-energy commodities: NCX did not reach their 2007 level until 2016Q1, and then they proceeded to decline in 2017.

Chart 1: **The recovery in non-energy exports has been gradual**

Real exports, 2007Q2=100, quarterly data



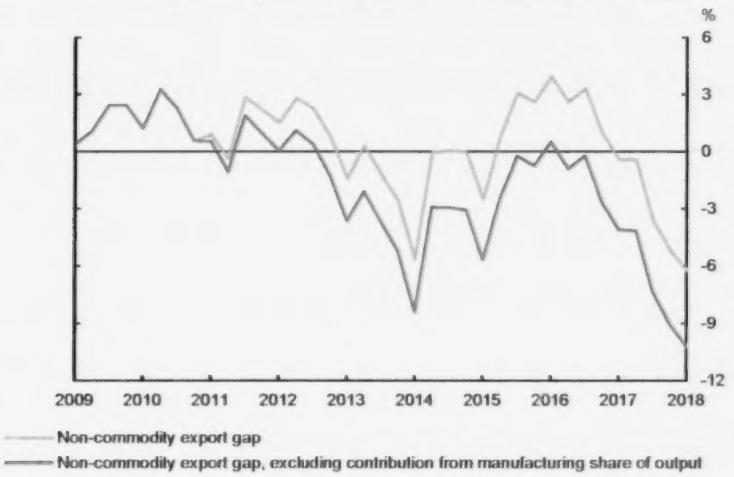
Sources: Statistics Canada and author's calculations

Last observation: 2018Q1

The large body of analysis devoted to Canadian exports in recent years has provided insight into the nature of Canada's declining global non-energy market share (De Munnik, Jacob and Sze 2012; Barnett and Charbonneau 2015, 2016; Labelle St-Pierre 2018) as well as an improved framework for predicting NCX (Binette, Chernis and De Munnik 2017; Alexander, Cayen and Proulx 2017). An important part of the improved framework, however, is the inclusion of the trend share of manufacturing output in GDP to proxy for broader structural factors and loss of competitiveness. Indeed, between 2011 and mid-2017, much of the weakness in NCX can been explained by the continued downward trend in this proxy (**Chart 2**).

Chart 2: **The continued shrinking of Canada's manufacturing sector is estimated to have weighed meaningfully on export growth**

Deviation of non-commodity exports from their estimated desired level, quarterly data



Sources: Statistics Canada and author's calculations

Last observation: 2018Q1

While helpful empirically, the proxy's evolution and relationship to exports have not yet been explored in detail. The manufacturing sector's declining share of output crudely summarizes a confluence of many complex structural adjustments. To a large extent, these adjustments reflect the response of Canada's manufacturing sector to intense global competition. We are interested in examining how these supply-side responses at the industry level might affect aggregate NEX growth going forward. In this context, this note aims to achieve three objectives:

- Examine the relationship between NEX and production capacity at the industry level to improve our understanding of the downward trend in NEX growth relative to foreign activity.
- Assess whether some of the recent weakness in exports could reflect supply-side developments.
- Estimate how the recent evolution of supply-side trends might affect NEX growth over the projection horizon.

2. Characterizing production capacity in Canada's export sector

2.1 Overview and framework

While foreign demand is a necessary condition for an export to occur, it is not sufficient. For a good or service to be exported, it must first be produced, and production requires capital and labour (among other things). Moreover, a large share of Canadian NEX comes from industries that make up a relatively small share of production. In 2014, 62 per cent of NEX were from manufacturing sectors whose production accounted for 31 per cent of gross non-energy production in Canada and only 10 per cent of value-added production.[1] In contrast, services exports accounted for 20 per cent of NEX, while services production made up 56 per cent of gross production and 75 per cent of value-added production.[2]

Industry-level trends in the factors of production in Canada can thus play an important role in determining the relationship between aggregate NEX growth and production growth in the future. For example, strong supply-side trends in the service sector may not manifest as strength in NEX because the sector is more domestically oriented. At the same time, negative developments in the export-oriented transportation sector would likely result in more pronounced effects on exports relative to aggregate production. To characterize the supply side of NEX at the industry level, we take stock of key macroeconomic variables—the capital stock, total labour input and total factor productivity (TFP) (**Table 1**)—for all three-digit manufacturing industries and other key non-energy industries for which we have complete data (services, mining, and forestry and logging).[3] We start by calculating a measure of observed TFP for the industries under

---

[1] Gross production figures are cited because exports are valued on a gross rather than a value-added basis in the national accounts. We use 2014 figures because gross figures are derived from Canada's symmetric input-output tables and are the latest available.

[2] Because of the lack of detailed data for services exports by industry, in this note services exports are defined by the product category and not as exports by service-providing industries. Balance of payments data from CANSIM Table 376-0109 suggest that not accounting for the share of services exports provided by goods industries should not affect our results: in 2015, goods-producing industries accounted for only about 15 per cent of total commercial services exports (or roughly 9 per cent of total services exports).

[3] In 2017, the industries included in this analysis accounted for 90.4 per cent of NEX and 88.2 per cent of non-energy production. The products not accounted for in NEX are "Other balance of payments adjustments," "Special transactions trade," "Recyclable waste and scrap" and "Farm, fishing and intermediate food products." The last category is excluded because detailed labour data required to calculate total labour input (from the Survey of Employment, Payrolls and Hours) are not available for the agricultural sector.

analysis using a Cobb-Douglas production function, augmented to account for capacity utilization.[4, 5] Under these assumptions, TFP can be expressed as follows:

$$A_t = \frac{Y_t}{(U_t K_t)^{\alpha} L_t^{1-\alpha}}. \quad (1)$$

Table 1: Summary of key macroeconomic variables by industry[6]

Variable	Symbol	Unit
Exports	X_t	Chained 2007 $
GDP at basic prices	Y_t	Chained 2007 $
Capital stock	K_t	Chained 2007 $
Capacity utilization	U_t	%
Total labour input	L_t	Hours
Employment		Persons
Average hours worked		Hours
Standard work week		Hours
Labour share of income	$1-\alpha$	%
Capital share of income	α	%
Total factor productivity	A_t	

2.2 Longer-run supply-side trends: 2002 to 2016

Table 2 summarizes the evolution of exports, output and the key supply-side variables by industry between 2002 and 2016.[7] Four longer-run observations about Canada's export sector stand out:

1. Between 2002 and 2016, the level of real exports declined in 8 of the 17 goods-producing industries under analysis. These industries account for 15 per cent of NEX.

[4] Our estimates of total factor productivity are generally strongly correlated with Statistics Canada's estimates of multifactor productivity at the detailed industry level in Table 36-10-0217-01 (formerly Table 383-0032). We estimate our own series rather than use the series in CANSIM for two reasons: (i) Statistics Canada's estimates at the level of detail we use end in 2014; (ii) we want to use a consistent framework to analyze the data and project it forward for the exercises in Section 3.

[5] This estimation method for total factor productivity results in the series capturing more than just technological progress. For example, these estimates will capture the impact on growth from inputs to production other than capital and labour (e.g., energy) in addition to statistical issues such as measurement error. The labour and capital shares of income are assumed to be constant over the sample.

[6] All data were retrieved from Statistics Canada's CANSIM database.

[7] The sample of our analysis in Section 2 is 2002 to 2016 because capital stock by industry data are currently available only up to 2016.

2. This is also the case for real value-added production: 11 of 17 goods industries produced less in 2016 than in 2002 (30 per cent of NEX).
3. All but two industries have reduced their capital stock or total labour input, limiting production capacity in the absence of offsetting productivity growth. The real capital stock has grown only in four goods-producing industries and the service sector, while total labour input has grown only in the service sector and mining and quarrying. Furthermore, 13 of 18 industries (56 per cent of NEX) reduced both factors of production between 2002 and 2016.
4. TFP has increased in 14 of 18 industries, providing partial offsets to the declines in the factors of production. The service sector is the only industry whose TFP has risen alongside both its capital stock and its labour input.

Table 2: Real production, exports and key supply-side variables by industry, 2002–16

	Real average annual growth (%), 2002 to 2016					2016 shares (%)	
Industry	Production	Exports	TFP	Capital stock	Total labour input	NEX	GDP (ex energy)
Services	2.4	1.9	0.6	2.6	1.6	19.5	75.7
Mining, quarrying (non-energy)	0.8	4.1	-3.1	6.5	1.9	2.9	1.6
Food, beverage, tobacco	0.8	1.6	1.1	-0.4	-0.2	5.6	1.9
Wood products	0.5	-1.5	3.0	-1.8	-2.8	4.9	0.6
Transportation equipment	0.3	0.2	1.7	-1.0	-1.6	21.7	1.8
Machinery	0.2	1.1	1.0	-0.5	-0.8	5.8	0.8
Non-metallic mineral products	0.0	-1.4	-0.2	2.2	-0.5	0.4	0.4
Plastics and rubber products	-0.1	-0.2	2.0	-1.5	-2.2	2.8	0.6
Primary metals	-0.3	1.2	1.5	1.9	-3.7	8.1	0.9
Chemical products	-0.4	2.2	0.9	-2.4	-0.4	5.4	0.9
Forestry and logging	-0.6	1.6	2.1	-2.2	-2.9	0.1	0.3
Miscellaneous	-0.8	0.9	-1.2	2.2	-0.2	2.3	0.2
Fabricated metal products	-1.1	-1.2	0.4	-0.4	-1.6	0.9	0.8
Computers and electronics	-2.0	1.0	2.0	-4.6	-4.2	5.0	0.4
Electrical equipment, appliances	-2.3	-0.7	0.2	-2.2	-2.7	0.1	0.2
Paper, print, related activities	-2.7	-1.5	1.5	-4.9	-3.7	3.3	0.7
Furniture and related products	-3.3	-1.6	-0.5	-2.8	-2.9	1.2	0.3
Clothing, leather, textiles	-7.7	-3.8	0.5	-5.9	-8.5	0.9	0.2

2.3 Comparing longer-run trends with the period following the global financial crisis

This longer-run perspective illustrates the effects of the many structural and cyclical challenges faced by Canada's goods-exporting industries since the early 2000s. However, the 15-year window between 2002 and 2016 masks improvements in many industry-level trends since the global financial crisis that help identify the industries that have been relatively more successful at adapting to the structural challenges caused by globalization.

In particular, 12 of the 17 goods-producing industries experienced stronger average annual production growth during 2011–16 than during 2002–07 (**Chart 3**, middle panel).[8] During the more recent period, these industries continued to shrink their capital stocks, but a rebound in total labour input and stronger TFP growth more than offset that effect on production, especially in forestry and logging and manufacturing of plastic, rubber and chemical products. The rise in average TFP growth across these 12 industries provides some evidence for the conventional wisdom that only Canada's more productive firms could survive the structural challenges posed by globalization in the early 2000s and the massive negative demand shock generated by the global financial crisis.

The remaining 5 of 17 goods industries (**Chart 3**, right panel), whose average production growth between 2011 and 2016 was negative or weaker than its 2002–07 average, are still experiencing large reductions in the factors of production and softening TFP growth.

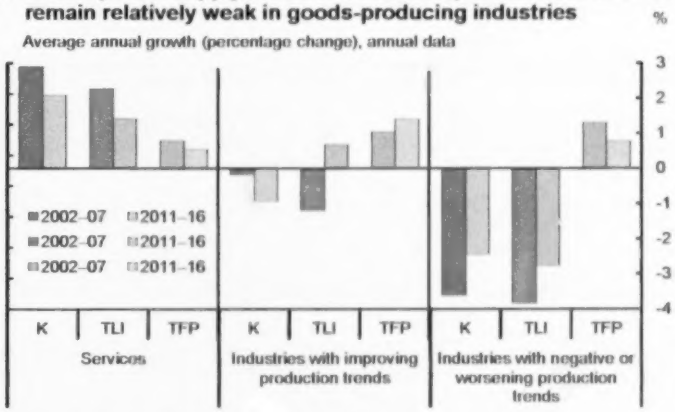
Canada's service sector stands in contrast to goods industries: its capital stock, labour input and TFP have all consistently grown, supporting the continued growth in both production and exports.

---

[8] The growth rates by industry embedded in Chart 3 can be found in Appendix Table A2. The category "industries with negative or worsening production trends" includes manufacturing of printing and published products; textiles and clothing; non-metallic mineral products; electrical equipment, components and appliances; and computers and electronics. The remaining goods industries (excluding mining and primary metal manufacturing) make up "industries with improving production trends."

Chart 3: **Industry-level supply-side trends have improved since 2011 but remain relatively weak in goods-producing industries**

Average annual growth (percentage change), annual data



Notes: Mining and primary metal manufacturing are excluded from the figures presented in this chart due to their unique trends (see Chart 6)

K=Capital stock; TLI = total labour input; TFP = total factor productivity

Sources: Statistics Canada and author's calculations

Last observation: 2016

2.4 Outcomes: production and exports

In the context of these supply-side developments, only 6 goods-producing industries increased their production over the full period (**Table 2**), although 13 have increased production since 2011 (**Table A2**). Moreover, average annual production growth in 12 of these 13 industries was higher between 2011 and 2016 than it was between 2002 and 2007.[9] Exports from these sectors have slightly outperformed production, with 15 of 17 goods industries seeing exports increase between 2011 and 2016. Export growth in 9 of these 15 industries was faster during 2011–16 than it was during 2002–07.

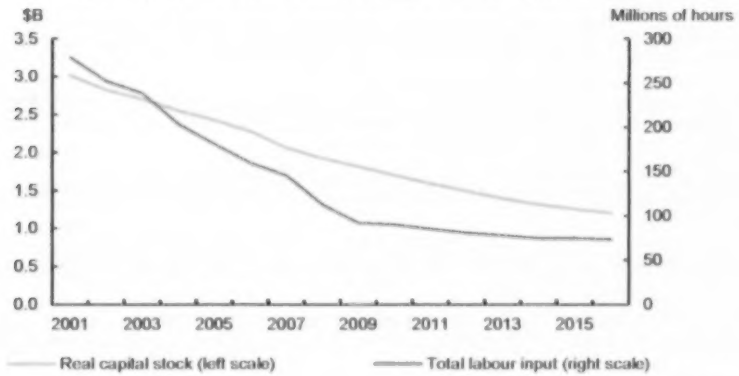
Interestingly, in three of the four industries where real production continued to contract after 2011, both TFP and exports grew despite declining in the pre-crisis years. These industries (clothing and textiles; paper, published products and printing; and electrical equipment and appliances) also happen to be ones for which related goods have suffered greatly from loss of competitiveness (Barnett and Charbonneau 2015; Labelle St-Pierre 2018).

[9] We compare the 2011–16 period to 2002–07 because (i) beginning the period in 2011 helps eliminate the impact on average growth from the initial bounce back in these series from the global financial crisis in 2010, and (ii) it results in periods of the same length. All growth rates by industry during these two periods can be found in Appendix Table A2.

Barring a turnaround, however, clothing and textiles, and electrical equipment, appliance and component manufacturing are two examples of industries in which supply-side trends are likely to constrain future exports. The persistent reductions in these industries' factors of production since 2002 (**Chart 4** and **Chart 5**) and declining production likely suggest that the export growth between 2011 and 2016 was unsustainable given that both industries export about half of their overall output.[10] Indeed, real exports from these industries have been weak more recently.

Chart 4: **Clothing and textile manufacturing has significantly reduced its factors of production, though more via capital in recent years**

Real capital stock (billions of 2007 chained dollars), total labour input, annual data

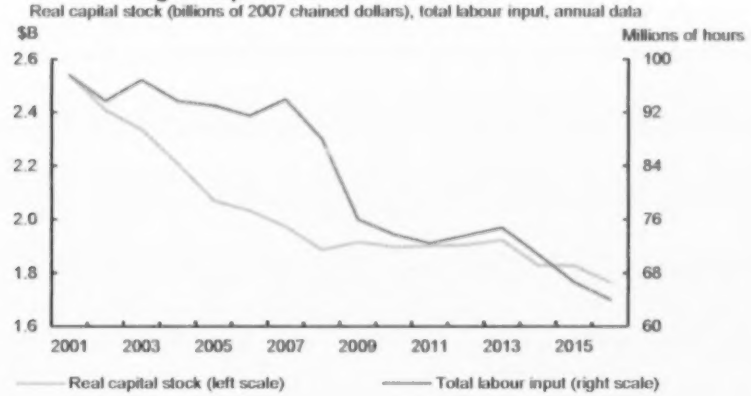


Sources: Statistics Canada and author's calculations

Last observation: 2016

Chart 5: **Electrical equipment, appliance and component manufacturing is also reducing its capital and labour resources**

Real capital stock (billions of 2007 chained dollars), total labour input, annual data



Sources: Statistics Canada and author's calculations

Last observation: 2016

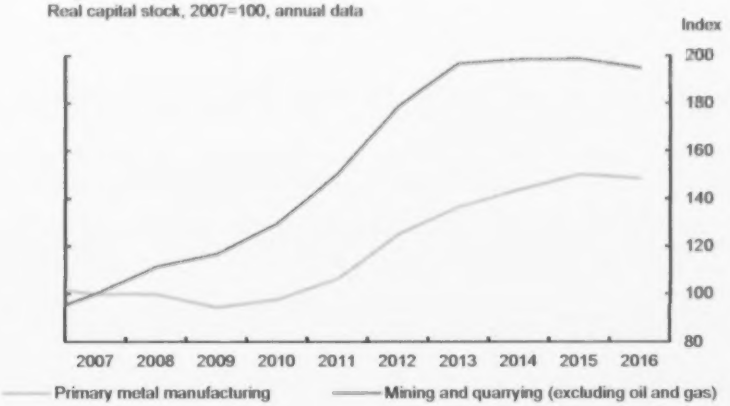
[10] Export intensities for clothing and textile manufacturing and electrical equipment, appliance and component manufacturing are 51.9 per cent and 50.5 per cent, respectively, as derived from the 2014 input-output tables.

Even for several industries whose production trends have improved, export performance has been somewhat soft more recently. For example, despite an improvement in average production growth, exports from the chemical manufacturing sector rose at a slower pace between 2011 and 2016 than between 2002 and 2007 and weakened significantly in 2017. The slower growth was driven by pharmaceutical exports, which softened after years of growing at a strong pace. Domestic pharmaceutical production has not displayed the same weakness, and growth rates in TFP, total labour input and overall production in the broader chemical manufacturing industry have been solid. In addition, pharmaceutical exports have begun to trend upward since late 2017, more in line with the industry's healthier supply-side developments.

The mining sector (excluding energy) and primary metal manufacturing have also contributed to soft exports in the past two years. Unlike in other goods-producing industries, however, it is likely not supply-side developments that are restraining these exports. Rather, mining and metals experienced surges in investment and a massive expansion in their capital stocks until 2013 and 2015, respectively (**Chart 6**), driven for many years by strong global demand for these goods and the corresponding super cycle in metal and mineral prices. As prices for these commodities declined between mid-2011 and early 2016 and new investment in these sectors fell off, the strong trends in the capital stocks reversed. While metal and mineral prices have been edging higher since 2016, exporting these commodities remains much less lucrative relative to previous years, though the capacity to produce (and export) these goods has likely not yet disappeared.

Chart 6: **Mining and metals likely have idle capacity due to strong past capital investments**

Real capital stock, 2007=100, annual data



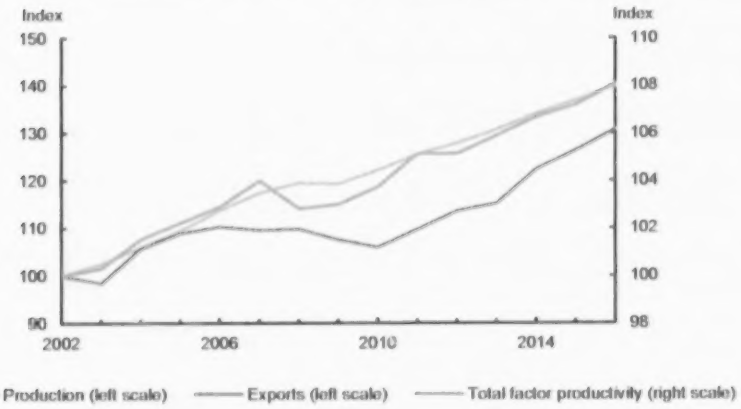
Sources: Statistics Canada and author's calculations

Last observation: 2016

Finally, unlike non-energy goods, service exports have observed solid growth since 2011 against a backdrop of rising capital, labour and TFP (**Chart 7**). These trends are likely supporting the continued strong growth in Canada's service exports even in recent years, which has helped offset some of the drag on exports from softness in non-energy goods.

Chart 7: **Services exports do not appear to be limited by production capacity**

Levels of production, real exports and total factor productivity, 2002 = 100, annual data



Sources: Statistics Canada and author's calculations

Last observation: 2016

3. What do recent supply-side trends imply for future NEX growth?

We use our framework to examine the implication of recent supply-side trends for average NEX growth over the projection horizon (2018–20).[11] NEX growth is projected forward using the following assumptions for each industry:

1. TFP, capital stock and total labour input grow at their average 2011–16 pace.[12]
2. Capacity utilization remains constant.
3. The ratio of exports to production remains constant.[13]

Our baseline assumptions suggest that NEX would grow approximately 1.9 per cent per year on average over the projection horizon if industry-level supply-side trends did not change. This compares to average foreign activity growth for NEX of about 3.3 per cent.[14]

There are several ways, however, in which production constraints caused by weak supply-side trends could become less binding than under our baseline assumptions and allow for NEX to grow more in line with foreign activity. For example, suppose industries whose capital stocks are currently falling increased investment by enough to exactly offset capital depreciation between 2018 and 2020.[15] This would require that average real investment growth by non-energy industries (according to this framework) rise by about 0.5 percentage points per year over the period, which would boost average NEX growth from 1.9 per cent per year to 2.2 per cent. If this decision to invest is driven by physical capacity constraints, increasing capacity utilization by 1 percentage point per year in all

---

[11] It is important to note that the figures reported in this section are generated independently of the Bank of Canada's projections and are not directly comparable to the July 2018 *Monetary Policy Report* projections. Additionally, the framework used in this note uses only annual data; consequently, the 2018 figures do not account for the quarterly patterns of growth in 2017 and the first quarter of 2018, which are very significant in determining annual average growth rates in 2018.

[12] We use average TFP growth for services for 2013–16 rather than the average for 2011–16 because TFP growth was weak in the services sector in 2011–12 but has been consistently stronger since.

[13] This assumption is to balance the observation that between the global financial crisis and 2015, the export-to-production ratio was trending up in many industries, but since 2015 many of these trends have reversed. If the trend between 2010 and 2015 resumes for all industries (which in some cases results in historically high export-to-output ratios), average export growth increases by about 1 percentage point. However, if export-to-output ratios in all industries evolve in line with more recent years, average export growth decreases by 0.9 percentage points.

[14] Figure as at the July 2018 *Monetary Policy Report* projection. Foreign activity growth for NEX is the average of foreign activity growth for NCX and NEX, weighted by export shares.

[15] Depreciation rates are assumed to be constant after their data end in 2016.

industries over the same period (in addition to the higher investment growth) would boost average export growth further to 2.4 per cent.

However, to boost NEX growth to match estimates of foreign activity growth over the projection horizon, much stronger assumptions are required. The following four scenarios (one for each of the key variables taken individually) outline the assumptions required to generate average NEX growth of 3.3 per cent per year using our supply-side framework:

1. **Investment** would need to grow by an additional 15 percentage points per year (approximately 17 per cent average annual growth) in all non-energy industries to grow the capital stock enough to meet the additional production requirements.
2. **Total labour input** growth would need to increase by 2.2 percentage points per year. Assuming average hours per week remained constant in all industries, this would require approximately 1 million additional jobs over the three years relative to the baseline.
3. **TFP growth** in all industries would need to rise by an average of 1.4 percentage points per year, effectively tripling average TFP growth across industries relative to trends following the global financial crisis.
4. **Capacity utilization** in all industries would need to rise sharply, averaging 87.5 per cent. If this were to happen, it would mark the highest three-year period of capacity utilization in the series' history (since 1987).

Combining stronger profiles for several variables can reduce the severity of the assumptions required. For example, relative to the baseline scenario, increasing average growth in the capital stock and total labour input by about 1 per cent and TFP growth by 0.5 percentage points per year between 2018 and 2020 for all industries would also lift average export growth to 3.3 per cent. These profiles would, in turn, require average annual investment growth to be 3.7 percentage points stronger and employment to rise by an additional 138,000 jobs per year. Alternatively, allowing capacity utilization to rise by 1.1 percentage points per year could replace the assumption that average TFP growth strengthens by 0.5 percentage points per year.

Overall, the results from this exercise highlight that recent supply-side trends in many goods-producing industries have likely weighed on the ability of exports to grow in line with foreign activity. Additionally, without further improvements in capital formation, hiring and TFP growth, especially in export-oriented sectors, NEX will likely continue growing at a slower pace than foreign activity.

References

Alexander, P., J.-P. Cayen and A. Proulx. 2017. "An Improved Equation for Predicting Canadian Non-Commodity Exports." Bank of Canada Staff Discussion Paper No. 2017-1.

Barnett, R. and K. Charbonneau. 2015. "Decomposing Movements in U.S. Non-Energy Import Market Shares." Bank of Canada Staff Discussion Paper No. 2015-5.

———. 2016. "A New Measure of the Canadian Effective Exchange Rate." Bank of Canada Staff Discussion Paper No. 2016-1.

Binette, A., T. Chernis and D. de Munnik. 2017. "Global Real Activity for Canadian Exports: GRACE." Bank of Canada Staff Discussion Paper No. 2017-2.

De Munnik, D., J. Jacob and W. Sze. 2012. "The Evolution of Canada's Global Export Market Share." Bank of Canada Staff Working Paper No. 2012-31.

Labelle St-Pierre, N. 2018. "Decomposing Canada's Market Shares: An Update." Bank of Canada Staff Analytical Note No. 2018-26.

Appendix Tables

Table A1: Mapping from exports by product to exports by industry

Industry	CANSIM vector numbers
Chemical products	V61989218, V61989240
Clothing, leather, textiles	V61989238
Computers and electronics	V61989226, V61989227
Electrical equipment, appliances	V61989228
Fabricated metal products	V61989214
Food, beverage, tobacco	v61989210
Forestry and logging	V61989221
Furniture and related products	V61989241
Machinery	v61989242
Mining, quarrying (ex energy)	V61989211, V61989210
Miscellaneous	V61989242
Non-metallic mineral products	V61989215
Paper, print, related activities	V61989222, V61989239
Plastics and rubber products	V61989219
Primary metals	V61989213
Services	V62305747
Transportation equipment	V61989229, V61989233
Wood products	V61989223

Table A2: Key macroeconomic variables, before and after the global financial crisis

	Average annual growth, 2011 to 2016 (%)				
	Figures in parentheses represent 2002–07 average				
Industry	Production	Exports	TFP	Capital stock	Total labour input
Services	2.3 (3.3)	3.6 (1.8)	0.5 (0.8)	2.1 (2.9)	1.4 (2.3)
Food, beverage, tobacco	1.5 (0.1)	2.6 (1.6)	0.9 (1.1)	-0.9 (-0.5)	1 (-0.9)
Machinery	2.4 (1.5)	4.1 (2.4)	1.5 (1.7)	-0.4 (-0.9)	1.3 (-0.3)
Mining, quarrying (ex energy)	3.6 (0.5)	2.9 (6.5)	0 (-5.3)	7.1 (4.5)	-0.8 (6.5)
Chemical products	2.3 (-1.8)	1.9 (6)	1.6 (-0.6)	-2.7 (-1.7)	2.2 (-0.8)
Forestry and logging	3.1 (-1.8)	5.1 (-2.4)	1.6 (0.9)	0.2 (-2.4)	1 (-2.5)
Primary metals	1.7 (1.3)	1.7 (2.1)	-0.2 (3.7)	7.3 (-2.7)	-1.7 (-2.8)
Miscellaneous	0.3 (-0.2)	3.4 (-0.5)	-0.3 (-1.4)	-0.2 (4.6)	0.8 (0.5)
Transportation equipment	3.6 (1.4)	4.1 (1.1)	1.8 (2.2)	-0.1 (0.6)	1.9 (-1.3)
Plastics and rubber products	3.7 (-0.9)	3.2 (0.8)	2.7 (2.3)	-1.8 (0.4)	1 (-3.3)
Fabricated metal products	0.8 (0.1)	4.9 (-3.3)	0.8 (0)	-1.7 (0.6)	0.5 (-0.4)
Non-metallic mineral products	0.2 (3.2)	7.2 (-3)	-0.9 (1.9)	2.7 (2.6)	0.3 (0.1)
Wood products	4.7 (0.8)	6.1 (-2.5)	3.5 (2.4)	-1.8 (1)	1.1 (-1.8)
Computers and electronics	-3.9 (0.7)	-1.7 (11.8)	0.7 (1.9)	-2.7 (-4.5)	-4.9 (-2)
Electrical equipment, appliances	-1.3 (-3.3)	2.5 (-0.4)	0.7 (-2.9)	-1.2 (-3.9)	-2.3 (0.1)
Paper, print, related activities	-1.4 (-1.5)	-0.1 (0.2)	1.9 (2.2)	-4.9 (-4.2)	-2.5 (-3.1)
Furniture and related products	0.7 (-4.6)	7.7 (-4.3)	1.7 (-3.5)	-5.3 (0.6)	-0.7 (-1.5)
Clothing, leather, textiles	-2.9 (-10.5)	1.4 (-6.6)	0.7 (-0.6)	-5.6 (-6.1)	-3.3 (-10.4)